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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Stefan Pleisch

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EXAMINER

CHANG, JULIAN

ART UNIT

PAPER NUMBER

2452

NOTIFICATION DATE

DELIVERY MODE

07/21/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

pair@tuchmanlaw.com

Office Action Summary	Application No. 09/821,168	Applicant(s) PLEISCH ET AL.	
	Examiner JULIAN CHANG	Art Unit 2452	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 March 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,5-11,13,14,16 and 17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-11,13,14,16 and 17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This Office action is responsive to communication filed on 03/11/10. Claims 1-3, 5-11, 13, 14, 16 and 17 are pending, and have been rejected.

Claim Rejections - 35 USC § 102

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1-3, 5-11, 13 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Rothermel et al. (hereinafter Rothermel) "A Fault-Tolerant Protocol for Providing the Exactly-Once Property of Mobile Agents", 1998.

3. As per claim 1, Rothermel teaches a method of operating a mobile agent (Fig 2, item S1, S2, wherein the S1 and S2 are mobile agent stages) that travels through a network of a number of computers, wherein the mobile agent is executed in a sequence of stages (Fig 2) and wherein each stage comprises a set of places (each node is fully capable of receiving multiple incoming processes, see for example, Fig 2, Fig 3 there are plurality of processes/put going from stage 1 to stage 2), the method comprising the following steps:

executing the mobile agent in at least one of the set of places of a respective one of the stages (Fig 2, places are nodes 1-5 in stage S₁ and 1-3 in S₂),

evaluating (abort is not triggered, and put is performed) in which place (Fig 2, nodes 1 through 5) of the respective stage the mobile agent has been executed successfully (Fig 3, wherein a successful execution entails going from S_i to S_{i+1}),

agreeing on a primary place (priority of worker node; Fig 2 and 3, node 1 in stage S 1 would be a primary place amongst other places) among the set of places (pg 3, Col. 1, lines 1-25; Col. 2, lines 25-32),

aborting and/or undoing any operation in connection with the mobile agent in any other place of the respective stage (pg 2, 3rd paragraph; pg 3, Col. 2, lines 25-32),

moving a modified mobile agent resulting from the successful execution to the next stage (Fig 3, the agent is moved to next stage S_{i+1}) to at least two forwarding places (pg 3, Col. 2, lines 28-35, wherein plurality of places are involved in determining which of the forwarding places would send the data to the next stage), and

wherein agreeing on a primary place includes generating a decision in each stage, the decision based on the primary place that corresponds to the place in which the mobile agent has executed successfully (pg 3, Col. 1, lines 1-15, lines 35-40, lines 45-50, where within a particular stage other than N_k , a node with priority, i.e. initial worker will execute the agent, i.e. `Execute(Agent);`), the set of places of the next stage to which the modified mobile agent is moved (Fig 2, wherein S2 is the next set of places; similarly, Fig 3, set S_{i+1} provides a set of places the information is moved to; pg 3, Col. 1, lines 35-40 further provide support for a set of places/nodes the information is moved to; pg 3, Col. 1, lines 45-50, i.e. `put(Agent) to (AllNodesOfNextStage)`), and the

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resulting modified mobile agent (pg 3, Col. 1, lines 45-50, where the execution of the agent results in modified mobile agent).

4. As per claim 2, Rothermel teaches the steps are repeated for any one of the sequence of stages (see for example, Fig 3; pg 3, Col. 2, lines 40-45).

5. As per claim 3, Rothermel teaches the mobile agent is executed sequentially in the set of places of the respective stage (Fig 3, going from stage S_i to S_{i+1}), and wherein the mobile agent is not executed anymore in subsequent places after successful execution in one of the set of places and agreement on this successful execution (pg 3, Col. 2, lines 25-33).

6. As per claim 5, Rothermel teaches at least one of the primary place and/or the set of places of the next stage and/or the resulting modified mobile agent is confirmed to at least all other places of the respective stage except the primary place (Fig 2, wherein each item in stage S_2 are capable of executing the process, but only one item is committed at a time to the process).

7. As per claim 6, Rothermel teaches at least one of the primary place and/or the set of places of the next stage and/or the resulting modified mobile agent is moved to all places of the next stage (Fig 2).

8. As per claim 7, Rothermel teaches the move is performed as a reliable forward function (pg 3, Col. 1, lines 1-15, wherein if there is a failure, another agent will take over, thus providing reliability).

9. As per claim 8, Rothermel teaches the steps are managed by a fault-tolerance enabler (FTE) (pg 3, lines 45-53, wherein orchestrator plays fault tolerance role as it will decide on which item in the stage gets to execute the process through a voting process) which is independent of the mobile agent (Fig 4).

10. As per claim 9, Rothermel teaches the FTE travels with the mobile agent to the set of places of the respective stage (pg 3, lines 45-53, wherein orchestrator plays fault tolerance role as it will decide on which item in the stage gets to execute the process through a voting process, furthermore, each stage will require a voting process to determine the committing node).

11. As per claim 10, Claim 10 is rejected for the same reasons as rejection to claim 1 above.

12. As per claim 11, Rothermel teaches the program code means is stored on a computer- readable medium (Fig 3, wherein stages has the ability to store software programs inherently).

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13. As per claim 13, Rothermel teaches wherein the mobile agent is a computer program that acts autonomously on behalf of an agent owner or user and that travels through a network of a number of computers (it should be noted that observer nodes automatically decided upon themselves through a voting protocol, which node will be the primary node. The primary node is then carrying the information to the next stage, see Col. 2, lines 25-35; Fig 3).

14. As per claim 14, the claim is rejected for the same reasons as rejection to claim 13 above.

Claim Rejections - 35 USC § 103

15. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

16. Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rothermel as applied to claim 1 above, and further in view of Pleisch ("State of the Art of Mobile Agent Computing – Security, Fault Tolerance, and Transaction Support", 1999).

17. As per claim 16, Rothermel does not explicitly teach non-primary places are configured to verify the modified mobile agent has successfully arrived at the set of places of the next stage to which the modified mobile agent is moved.

In Pleisch, one of the named inventors discloses that when execution of stage a_i terminates, the briefcase b is broadcast to all rear guards of a_i , and if the rear guards of a_i receive b , then they know that a_i has correctly terminated. (¶ spanning p. 12 and 13). Since the non-primary nodes of Rothermel monitor to ensure that execution of a stage is successful, the combination of Rothermel and Pleisch would involve the non-primary nodes monitoring to ensure that the rear guards a_i receive the briefcase b .

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to verify that the modified mobile agent has successfully arrived at the next stage as taught by Pleisch in order to ensure that execution of the current stage has correctly terminated.

18. As per claim 17, the claim is rejected for the same reasons as rejection to claim 16 above.

Response to Arguments

19. Applicant's arguments filed 03/11/10 have been fully considered but they are not persuasive.

a. Applicant argues that Rothermel fails to teach "generating a decision in each stage, the decision based on the primary place that corresponds to the place in which the mobile agent has executed successfully, the set of places of the next stage to which the modified mobile agent is moved, and the resulting modified mobile agent". Remarks 7-8. Applicant discloses that the "decision" is a

solution to the agreement problem. Spec. 4. In other words, the "decision" is what is computed while solving the agreement problem. In view of applicant's specification, this claim limitation has been interpreted as requiring, at each stage, the computation of the primary place that corresponds to the place in which the mobile agent has executed successfully, the set of places of the next stage to which the modified mobile agent is moved, and the resulting modified mobile agent. In view of this interpretation, applicant's argument is not persuasive because each of: the primary place that corresponds to the place in which the mobile agent has executed successfully, the set of places of the next stage to which the modified mobile agent is moved, and the resulting modified mobile agent are computed in each stage of Rothermel.

First, Rothermel teaches computing the primary place that corresponds to the place in which the mobile agent has executed successfully. Rothermel teaches that more than one node may execute an agent at the same time (p. 3, Col. 2, lines 20-35). But because of the exactly-once property of agents require exactly one commit per stage, the nodes must perform a voting protocol to determine which node will be the node to commit the transaction and forward the modified agent to the next stage (p. 3, Col. 2, lines 25-35; Fig. 3).

Next, Rothermel teaches computing the set of places of the next stage to which the modified mobile agent is moved. Rothermel teaches a *put* operation that includes as a parameter 'AllNodesOfNextStage' (p. 3, Col. 1, last ¶). In

order for the node to call such an operation with such a parameter, the parameter must be known and must have been determined or computed.

Finally, Rothermel teaches computing the resulting modified mobile agent. This is clear because the modified agent is pass on to the next stage in the *Put(Agent)* operation (Id).

b. Applicant argues that Rothermel teaches away from Applicant's invention, and that Rothermel's principle of operation would have to be changed. Remarks 8. Applicant's argument is not persuasive because such arguments are applicable only to obviousness rejections (i.e., 35 USC § 103). In the present case, claims 1 and 10 are rejected under 35 USC § 102 as being anticipated by Rothermel.

Conclusion

2. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JULIAN CHANG whose telephone number is (571)272-8631. The examiner can normally be reached on Monday thru Friday 9AM to 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thu Nguyen can be reached on (571) 272-6967. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. C./

Examiner, Art Unit 2452

/THU NGUYEN/

Supervisory Patent Examiner, Art Unit 2452